

CLAIMS

What is claimed is:

1. A process for fabricating a leadless plastic chip carrier, comprising:
laminating a first metal strip to a second metal strip to form a leadframe strip;
selectively etching said first metal strip to define at least a die attach pad and at least
one row of contact pads;
mounting a semiconductor die to said die attach pad and wire bonding said
semiconductor die to ones of said contact pads;
encapsulating a top surface of said leadframe strip in a molding material;
removing said second metal strip, thereby exposing said die attach pad and said at least
one row of contact pads; and
singulating the leadless plastic chip carrier from the leadframe strip.
2. The process for fabricating a leadless plastic chip carrier according to claim 1,
wherein said laminating said first metal strip to said second metal strip includes hot roll solder
reflow joining of said first metal strip to said second metal strip to thereby form a solder bond
therebetween.
3. The process for fabricating a leadless plastic chip carrier according to claim 1,
wherein said laminating said first metal strip to said second metal strip includes depositing one
of tin and solder on said second metal strip and hot roll solder reflow joining of said first metal
strip to said second metal strip, with a solder flux disposed between the metal strips.
4. The process for fabricating a leadless plastic chip carrier according to claim 1, further
comprising selectively preplating at least one of silver, nickel/gold, and nickel/palladium on a first
surface of said first metal strip, prior to laminating said first metal strip to said second metal
strip, wherein said laminating includes joining a second surface of said first metal strip to a first
surface of said second metal strip, the selective preplating being plated in at least a pattern of
said at least one row of contact pads.
5. The process for fabricating a leadless plastic chip carrier according to claim 1, further
comprising selectively plating at least one of silver, nickel/gold, and nickel/palladium, in at least
a pattern of contact pads, on a top surface of said leadframe strip, prior to selectively etching

said top surface of said leadframe strip, the selective plating functioning as an etch-resist.

6. The process for fabricating a leadless plastic chip carrier according to claim 5, wherein said selectively etching said first metal strip includes depositing an etch-resist mask on a portion of said top surface of said leadframe strip, etching said top surface of said leadframe strip, and stripping off said etch-resist mask, said portion of said upper surface forming said die attach pad.

7. The process for fabricating a leadless plastic chip carrier according to claim 3, wherein said depositing solder on said second metal strip includes depositing one of tin and solder on a first surface and a second surface of said second metal strip.

8. The process for fabricating a leadless plastic chip carrier according to claim 7, wherein said removing said second metal strip includes stripping said one of tin and solder on said second surface of said second metal strip and etching away said second metal strip.

9. The process for fabricating a leadless plastic chip carrier according to claim 7, wherein said removing said second metal strip includes heating to detach said second metal strip.

10. The process for fabricating a leadless plastic chip carrier according to claim 8, further comprising solder reflowing to separate said one of tin and solder plating from a bottom surface of the molding material.

11. A process for fabricating a leadless plastic chip carrier, comprising:
providing a first metal strip;
depositing one of tin and solder on an upper surface and a lower surface of a second metal strip;

hot roll solder reflow joining of said first metal strip to said second metal strip, with a solder flux disposed between the metal strips, to solder bond said first metal strip and said second metal strip, thereby forming a leadframe strip;

selectively plating at least one of silver, nickel/gold, and nickel/palladium to an upper surface of said first copper strip, in a pattern of at least one row of contact pads;

depositing an etch-resist mask on a top surface of said leadframe strip, said portion of said upper surface forming a die attach pad;

etching said top surface of said leadframe strip to define at least said die attach pad and said at least one row of contact pads;

stripping off said etch-resist mask;

mounting a semiconductor die to said die attach pad and wire bonding said semiconductor die to ones of said contact pads;

encapsulating said top surface of said leadframe strip in a molding material;

stripping said one of tin and solder on said lower surface of said second metal strip;

removing said second metal strip;

reflowing to separate said one of tin and solder from a bottom surface of the molding material; and

singulating the leadless plastic chip carrier from the leadframe strip.

12. The process for fabricating a leadless plastic chip carrier according to claim 11, wherein said step of removing said second metal strip comprises etching away said second metal strip.

13. The process for fabricating a leadless plastic chip carrier according to claim 11, wherein said step of removing said second metal strip comprises heating to detach said second metal strip.

14. A process for fabricating a leadless plastic chip carrier, comprising:
selectively plating at least one of silver, nickel/gold, and nickel/palladium to an upper surface of a first metal strip, in a pattern of at least one row of contact pads;
depositing one of tin and solder on an upper surface and a lower surface of a second metal strip;

hot roll solder reflow joining of said first metal strip to said second metal strip, with a solder flux disposed between the metal strips, to solder bond said first metal strip and said second metal strip, thereby forming a leadframe strip;

depositing an etch-resist mask on a top surface of said leadframe strip, said portion of said upper surface forming a die attach pad;

etching said top surface of said leadframe strip to define at least said die attach pad and

said at least one row of contact pads;
 stripping off said etch-resist mask;
 mounting a semiconductor die to said die attach pad and wire bonding said semiconductor die to ones of said contact pads;
 encapsulating said top surface of said leadframe strip in a molding material;
 stripping said one of tin and solder on said lower surface of said second metal strip;
 etching away said second metal strip;
 reflowing to separate said one of tin and solder from a bottom surface of the molding material; and singulating the leadless plastic chip carrier from the leadframe.

15. A process for fabricating a leadless plastic chip carrier, comprising:

 laminating a first metal strip to a second metal strip to form a leadframe strip;
 selectively etching said first metal strip to define at least a row of contact pads;
 mounting a semiconductor die to said second metal strip, on a same side thereof as said contact pads and wire bonding said semiconductor die to ones of said contact pads;
 encapsulating a top surface of said leadframe strip in a molding material;
 removing said second metal strip, thereby exposing said semiconductor die and said row of contact pads; and
 singulating the leadless plastic chip carrier from the leadframe strip.

16. The process for fabricating a leadless plastic chip carrier according to claim 15, wherein said laminating said first metal strip to said second metal strip includes hot roll solder reflow joining of said first metal strip to said second metal strip to thereby form a solder bond therebetween.

17. The process for fabricating a leadless plastic chip carrier according to claim 15, wherein said laminating said first metal strip to said second metal strip includes depositing one of tin and solder on said second metal strip and hot roll solder reflow joining of said first metal strip to said second metal strip, with a solder flux disposed between the metal strips.

18. The process for fabricating a leadless plastic chip carrier according to claim 15, further comprising selectively preplating at least one of silver, nickel/gold, and nickel/palladium on a first surface of said first metal strip, prior to laminating said first metal strip to said second

metal strip, wherein said laminating includes joining a second surface of said first metal strip to a first surface of said second metal strip, the selective preplating being plated in at least a pattern of said row of contact pads.

19. The process for fabricating a leadless plastic chip carrier according to claim 15, comprising selectively plating at least one of silver, nickel/gold, and nickel/palladium, in at least a pattern of contact pads, on a top surface of said leadframe strip, prior to selectively etching said top surface of said leadframe strip, the selective plating functioning as an etch-resist.

20. The process for fabricating a leadless plastic chip carrier according to claim 17, wherein said depositing solder on said second metal strip includes depositing one of tin and solder on a first surface and a second surface of said second metal strip.

21. The process for fabricating a leadless plastic chip carrier according to claim 20, wherein said removing said second metal strip includes stripping said one of tin and solder on said second surface of said second metal strip and etching away said second metal strip.

22. The process for fabricating a leadless plastic chip carrier according to claim 20, wherein said removing said second metal strip includes heating to detach said second metal strip.

23. The process for fabricating a leadless plastic chip carrier according to claim 21, further comprising solder reflowing to separate said one of tin and solder plating from a bottom surface of the molding material.

24. A process for fabricating a leadless plastic chip carrier, comprising:
providing a first metal strip;
depositing one of tin and solder on an upper surface and a lower surface of a second metal strip;

hot roll solder reflow joining of said first metal strip to said second metal strip, with a solder flux disposed between the metal strips, to solder bond said first metal strip and said second metal strip, thereby forming a leadframe strip;

selectively plating at least one of silver, nickel/gold, and nickel/palladium to an upper

surface of said first copper strip, in a pattern of at least one row of contact pads;
etching said top surface of said leadframe strip to define said at least one row of contact pads;
mounting a semiconductor die to said second metal strip and wire bonding said semiconductor die to ones of said contact pads;
encapsulating said top surface of said leadframe strip in a molding material;
stripping said one of tin and solder on said lower surface of said second metal strip;
removing said second metal strip;
reflowing to separate said one of tin and solder from a bottom surface of the molding material; and
singulating the leadless plastic chip carrier from the leadframe strip.

25. The process for fabricating a leadless plastic chip carrier according to claim 24, wherein said step of removing said second metal strip comprises etching away said second metal strip.

26. The process for fabricating a leadless plastic chip carrier according to claim 24, wherein said step of removing said second metal strip comprises heating to detach said second metal strip.

27. A process for fabricating a leadless plastic chip carrier, comprising:
selectively plating at least one of silver, nickel/gold, and nickel/palladium to an upper surface of a first metal strip, in a pattern of at least one row of contact pads;
depositing one of tin and solder on an upper surface and a lower surface of a second metal strip;
hot roll solder reflow joining of said first metal strip to said second metal strip, with a solder flux disposed between the metal strips, to solder bond said first metal strip and said second metal strip, thereby forming a leadframe strip;
etching said top surface of said leadframe strip to define said at least one row of contact pads;
mounting a semiconductor die to said second metal strip and wire bonding said semiconductor die to ones of said contact pads;
encapsulating said top surface of said leadframe strip in a molding material;

stripping said one of tin and solder on said lower surface of said second metal strip;
etching away said second metal strip;
reflowing to separate said one of tin and solder from a bottom surface of the molding
material; and singulating the leadless plastic chip carrier from the leadframe.